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Recent highlights and future possibilities in ferromagnetic semiconductors

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The epitaxial diluted magnetic semiconductor (Ga,Mn)As is a model system for investigating spin and spinorbit phenomena in magnetic and semiconducting systems. Studies of this compound have led to the elucidation of new functionalities in experimental spintronic devices, including optical and electrical control of the magnetic order, with general applicability to a wide range of material systems. This talk will review the basic material properties of (Ga,Mn)As and recent progress in understanding its electronic, magnetic and structural properties, including the mechanisms limiting its Curie temperature. Future prospects for new materials, with functionality at elevated temperatures, will be discussed.

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